CSCI Integration Test (CIT) Procedures

Data Bank Shuttle Automated Function Executive (DBSAFE)

Checkout and Launch Control Systems (CLCS)

84K06515

Approval:

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REVISION HISTORY

REV	DESCRIPTION	DATE

LIST OF EFFECTIVE PAGES				
Dates of issue of change pages are:				
Page No.	**A or D***	**Issue or Change No.**	**CR No.**	**Effective Date****

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CSCI INTEGRATION TEST (CIT) PROCEDURES

DATA BANK SHUTTLE AUTOMATED FUNCTION EXECUTIVE (DBSAFE)

CHECKOUT AND LAUNCH CONTROL SYSTEMS (CLCS)

1. SCOPE

This document defines the test approach and procedures to be executed for the Redstone delivery of the Data Bank Shuttle Automated Function Executive (DBSAFE) by CLCS Software Development. Testing will occur at the Kennedy Space Center in the Processing Control Center (PCC) Shuttle Data Center (SDC).

1.1 IDENTIFICATION

This document is the Checkout and Launch Control System (CLCS) Redstone Delivery CSCI Integration Test Procedures for DBSAFE Document, 84K06515, Rev Basic.

1.2 PURPOSE

The purpose of this document is to define a suite of test procedures that will accurately assess the delivered software to ensure it is functional and meets project commitments for the Redstone delivery. The CLCS DBSAFE software is software ported from the SDC DBSAFE software; the ported CLCS DBSAFE software is considered the CLCS DBSAFE Baseline. These test procedures will assess any deltas made to the baseline ported software.

1.3 CSCI OVERVIEW

CLCS DBSAFE is a comprehensive Checkout and Launch Control System (CLCS) software capability that provides an interactive user interface supporting the evaluation, incorporation, and historical tracking of engineering changes to the FD Database. DBSAFE for CLCS is ported code baselined from the DBSAFE software developed for the replatform of CCMS Support Software to the Shuttle Data Center (SDC).

The core purpose of the CLCS DBSAFE is to provide the capability to maintain the FD Database. The FD Database is the portion of the CLCS DBSAFE database that contains the information on the measurements, commands, and system parameters needed for CLCS. The attributes of measurements and commands for the orbiters, payloads, ground support equipment, etc., are collected from the various design agencies, processed into a format that is compatible with CLCS, and stored in the FD Database using CLCS DBSAFE software. The data is then available to support the CLCS Application Software Development Environment and Test Build processes.

CLCS DBSAFE also provides the capability to create and maintain TCID build specifications for the FD Directory Build process. CLCS DBSAFE validates and stores user specifications in the CLCS DBSAFE database. CLCS DBSAFE facilitates the generation of TCID specifications by automating the following functions:

- Assignment and traceability of Vehicle Configuration Names (VCN) and formats to Test Configuration Identifiers (TCID) based on a list of engineering provided by Ground Software Integration (GSI)
- Assignment of projected VCNs and formats to TCIDs based on matching each mission/TCID configuration to the effectivities of engineering changes in the FD Database
- Assignment and traceability of format revisions to each mission/TCID based on the format engineering defined in the Shuttle Data Tape (SDT)
- Support elimination of invalid/duplicate/overlapping addressing in the FD Database, that would otherwise cause errors in a TCID build.

1.4 HARDWARE AND SOFTWARE CONFIGURATIONS

CLCS DBSAFE software executes primarily on the LPS Software Development Network (LSDN) of Hewlett-Packard UNIX workstations. The CLCS DBSAFE menus and all user interface applications are written using Oracle*Forms. All reports are initiated from Oracle*Forms based applications accessed from the CLCS DBSAFE menu. The reports are written in Oracle*Report and are generated as background processes running on the LSDN workstation.

The CLCS DBSAFE main menu is initiated through the Relational Software Interface (RSI) system resident on the LSDN. RSI is one of several configuration management tools and techniques designed to fulfill the access control and data integrity requirements of CLCS applications. RSI also satisfies the Ad Hoc Query requirements for CLCS DBSAFE by providing read-only access to the CLCS DBSAFE database via either Oracle SQL*Plus or Oracle Browser.

All CLCS DBSAFE data is stored in an Oracle database located on a Digital UNIX server within the SDC. Data supporting the CLCS DBSAFE management services is located in the same physical database as the FD Database; the term "CLCS DBSAFE database" encompasses both. The distinction is important because CLCS DBSAFE supports a much higher degree of configuration management and control over the data within the FD Database. CLCS DBSAFE uses stored database procedures and triggers to satisfy many processing requirements. Communication between the software running on the LSDN and the database in the SDC is handled by Oracle SQL*Net.

1.5 DOCUMENT ORGANIZATION

This document is divided into three sections and four appendices:

Section 1, Scope, discusses the purpose of the CSCI Integration Test, provides a system overview , and describes software and hardware configurations for the system.

Section 2, Applicable Documents, lists the documents used to create and those supporting this document.

Section 3, Test Case Description, contains a description of the test cases, the pass/fail criteria, and the procedures in detail.

Appendix A, Acronyms and Definitions, contains a listing of acronyms and selected word definitions (for words which may have multiple interpretations)

Appendix B, Requirements Traceability and Test Methods Matrix, contains the requirements verification matrix for the test.

Appendix C, Resource Requirements, contains a list of software, hardware, and personnel requirements necessary for each test.

Appendix D, Standard Operating Test Procedures, contains any specific, standard procedures identified within the test cases.

2. APPLICABLE DOCUMENTATION

The following documents, of the revision shown, form a part of this document to the extent specified.

2.1 PARENT DOCUMENTS

The documents in this paragraph establish the criteria and technical basis for the existence of this document. The parent documents are:

Parent Document	Document Number	Rev.	Date
CLCS DBSAFE Software Requirements and Design	84K0910-010	Basic	10/21/97

Table 2.1: Parent Documents

2.2 APPLICABLE DOCUMENTS

Applicable documents are those documents which form a part of this document. These documents, at the revisions listed below, carry the same weight as if they were stated within the body of this document.

Applicable Document	Document Number	Rev.	Date
CLCS DBSAFE Software Requirements and Design	84K00910-010	Basic	10/21/97

Table 2.2: Applicable Documents

2.3 REFERENCE DOCUMENTS

Reference documents are those documents which, though not a part of this document, serve to clarify the intent and contents of this document.

Reference Document	Document Number	Rev.	Date
CLCS System Level Specification	84K00200	Basic	6/26/97
CLCS DBSAFE Software Requirements and Design	84K00910-010	Basic	10/21/97

Table 2.3: Reference Documents

3. TEST CASE DESCRIPTION

The test cases will validate that all the stated Redstone requirements have been satisfied. This section describes each test case, the expected results, the pass/fail criteria, and a step by step procedure to execute the test. Appendix B contains the Requirements Traceability and Test Methods Matrix, which maps functional requirements to the test case that verifies those requirements. Test cases are stand alone, and can be executed in any order, however, it is recommended to run the test cases in the order in which they are presented.

3.1 TEST CASE 3.1 - TEST LPC INDICATOR

Validate that an indicator to identify HIMs with a Local Process Controller (LPC) has been added.

3.1.1 Test Description

3.1.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe of the DBSAFE.HIM_INFO table will be performed

Expected Results: An LPC_IND column will be present in the table.

b) From the Implement option of the CLCS DBSAFE Main Menu, the HIM Definition suboption will be selected. A HIM_INFO record will then be Added with Yes for the LPC_IND value.

Expected Results: (The Add will be verified with the Query capability of the HIM Definition form.) The HIM_INFO record will exist and will have an LPC_IND value of Yes.

c) The Added HIM record will then be Modified with the Modify Immediate capability to change the LPC_IND value to No.

Expected Results: (Again, the results will be verified with the Query capability.) The Added HIM_INFO record will still exist and it will now have an LPC_IND value of No.

3.1.1.2 Resource Requirements

3.1.1.2.1 Test Personnel

Personnel required include Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.1.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.1.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.1.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.1.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.1	An indicator to identify HIMs with a Local Process Controller will be added.

3.1.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.1.3 Procedure

Refer to Procedure 3.1 in Table 3.1 for test procedures.

Procedure 3.1 - Test LPC Indicator					
		Date:	**Location:**	**Start Time:**	
Test Setup/Initial Conditions -					
Step	**Description**	**Expected Results**	**Comments**	**TC**	**QA**
1.	Via SQL*Plus , a describe of the DBSAFE.HIM_INFO table will be performed	An LPC_IND column will be present in the table.			
2.	From the Implement option of the CLCS DBSAFE Main Menu, the HIM Definition suboption will be selected. A HIM Info record will then be Added with Yes for the LPC_IND value.	(The Add will be verified with the Query capability of the HIM Definition form.) The HIM_INFO record will exist and will have an LPC_IND value of Yes.			
3.	The Added HIM record will then be Modified with the Modify Immediate capability to change the LPC_IND value to No.	(Again, the results will be verified with the Query capability.) The Added HIM_INFO record will still exist and it will now have an LPC_IND value of No.			

Table 3.1

End Time: _____

Signature Page: Test Case 3.1 - Test LPC Indicator

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.2 TEST CASE 3.2 - TEST DATA FUSION FDS

Validate that support for Data Fusion Function Designators has been provided.

3.2.1 Test Description

3.2.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a select of all sources in DBSAFE.SOURCE_INFO will be performed.

Expected Results: A new fusion source, FUSN, will be present.

b) From the Implement option of the CLCS DBSAFE Main Menu, the Compiler Definition suboption will be selected. A Pseudo FD with a source of FUSN will be added.

Expected Results: (The Add will be verified with the Query capability of the Compiler Definition form.) A DBSAFE.COMMON_CD_INFO record will exist for the FD and source will be FUSN.

c) From the Implement option of the CLCS DBSAFE Main Menu, the Hardware Definition suboption will be selected. Hardware information will be added to the Fusion FD.

Expected Results: (The Add will be verified with the Query capability of the Hardware Definition form.) A DBSAFE.COMMON_HD_INFO record and an associated HD variant record will exist for the FD.

d) Address records will then be attempted to be added to the Fusion FD. From the Implement option of the CLCS DBSAFE Main Menu, an Address suboption will be selected. Address information for the Fusion FD will attempted to be entered.

Expected Results: The address information will not be permitted to be entered.

3.2.1.2 Resource Requirements

3.2.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.2.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.2.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.2.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.2.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.2	Support for Data Fusion Function Designators will be provided. • Treat Fusion as a new data source in CLCS DBSAFE • Support all current Pseudo FDs for Fusion data • Only support compiler and hardware data for Fusion data. (no addressing)

3.2.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.2.3 Procedure

Refer to Procedure 3.2 in Table 3.2 for test procedures.

Procedure 3.2 - Test Data Fusion FDs

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus , a select of all sources in DBSAFE.SOURCE_INFO will be performed.	A new fusion source, FUSN, will be present.			
2.	From the Implement option of the CLCS DBSAFE Main Menu, the Compiler Definition suboption will be selected. A Pseudo FD with a source of FUSN will be added.	(The Add will be verified with the Query capability of the Compiler Definition form.) A DBSAFE.COMMON_CD_INFO record will exist for the FD and source will be FUSN.			
3.	From the Implement option of the CLCS DBSAFE Main Menu, the Hardware Definition suboption will be selected. Hardware information will be added to the Fusion FD.	(The Add will be verified with the Query capability of the Hardware Definition form.) A DBSAFE.COMMON_HD_INFO record and an associated HD variant record will exist for the FD			
4.	Address records will then be attempted to be added to the Fusion FD. From the Implement option of the CLCS DBSAFE Main Menu, an Address suboption will be selected. Address information for the Fusion FD will attempted to be entered.	The address information will not be permitted to be entered.			

Table 3.2

End Time: _____

Signature Page: Test Case 3.2 - Test Data Fusion FDs

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.3 TEST CASE 3.3 - TEST USER MAINTENANCE OF GATEWAY DEFS.

Validate that user maintenance of Gateway definitions that use currently supported link indicators will be supported. (i.e., a new GSE Gateway can be defined by the end-user).

3.3.1 Test Description

3.3.1.1 Detailed Description

Test Cases:

a) From the TCID option of the CLCS DBSAFE Main Menu, the Gateway suboption will be selected. A Gateway record will then be Added.

Expected Results: (The Add will be verified with the Query capability of the Gateway form.) The Gateway record will exist.

3.3.1.2 Resource Requirements

3.3.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.3.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.3.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.3.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.3.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.3	User maintenance of Gateway definitions that use currently supported link indicators will be supported. (i.e., a new GSE Gateway can be defined by the end-user). This is possible due to the fact that Gateway processing is driven by a 'link indicator' rather than Gateway names.

3.3.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.3.3 Procedure

Refer to Procedure 3.3 in Table 3.3 for test procedures.

Procedure 3.3 - Test user maintenance of gateway definitions

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	From the TCID option of the CLCS DBSAFE Main Menu, the Gateway suboption will be selected. A Gateway record will then be Added.	(The Add will be verified with the Query capability of the Gateway form.) The Gateway record will exist.			

Table 3.3

End Time: _____

Signature Page: Test Case 3.3 - Test user maintenance of gateway definitions

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.4 TEST CASE 3.4 - TEST ELIMINATION OF BUFFER LENGTH FACTOR

Validate that the times-2-to-the-buffer-length factor in the calculation of M-scaling has been removed.

3.4.1 Test Description

3.4.1.1 Detailed Description

Test Cases:

a) Test by code inspection. Bring up text (/dbsafe/imp/imp_cal_fd_def.fmt) file for the SDC version of Cal FD Definition form. Inspect the code for calculating m_scaling.

Expected Results: The code contains the 2**BL calculation.

b) Test by code inspection. Bring up text (/dbsafe**c**/imp/imp_cal_fd_def.fmt) file for the CLCS version of Cal FD Definition form. Inspect the code for calculating m_scaling.

Expected Results: The code does not contain the 2**BL calculation.

3.4.1.2 Resource Requirements

3.4.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.4.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.4.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.4.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.4.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description

1.2.2.4	The times-2-to-the-buffer-length factor in the calculation of M-scaling will be removed.

3.4.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.4.3 Procedure

Refer to Procedure 3.4 in Table 3.4 for test procedures.

Procedure 3.4 - Test elimination of buffer length factor

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Test by code inspection. Bring up text (/dbsafe/imp/imp_cal_fd_def.fmt) file for the SDC version of Cal FD Definition form. Inspect the code for calculating m_scaling.	The code contains the 2**BL calculation.			
2.	Test by code inspection. Bring up text (/dbsafe**c**/imp/imp_cal_fd_def.fmt) file for the CLCS version of Cal FD Definition form. Inspect the code for calculating m_scaling.	The code does not contain the 2**BL calculation.			

Table 3.4

End Time: _____

Signature Page: Test Case 3.4 - Test elimination of buffer length factor

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.5 TEST CASE 3.5 - TEST MAPPING OF DBSAFE RSYS TO TCID RSYS

Validate that the user specifications for mapping each FD Database Responsible System (RSYS), applicable to a TCID, to a TCID RSYS to support FD Directory Build is being validated and stored.

3.5.1 Test Description

3.5.1.1 Detailed Description

Test Cases:

a) From the TCID option of the CLCS DBSAFE Main Menu, the TCID_RSYS suboption will be selected. A TCID RSYS record will then be Added.

Expected Results: (The Add will be verified with the Query capability of the TCID_RSYS form.) The TCID RSYS record will exist

3.5.1.2 Resource Requirements

3.5.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.5.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.5.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.5.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.5.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.5	User specifications for mapping each FD Database Responsible System (RSYS), applicable to a TCID, to a TCID RSYS to support FD Directory Build will be validated and stored.

3.5.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.5.3 Procedure

Refer to Procedure 3.5 in Table 3.5 for test procedures.

Procedure 3.5 - Test mapping of DBSAFE RSYS to TCID RSYS **Date:** **Location:** **Start Time:**					
Test Setup/Initial Conditions -					
Step	**Description**	**Expected Results**	**Comments**	**TC**	**QA**
1.	From the TCID option of the CLCS DBSAFE Main Menu, the TCID_RSYS suboption will be selected. A TCID RSYS record will then be Added.	(The Add will be verified with the Query capability of the TCID_RSYS form.) The TCID RSYS record will exist			

Table 3.5

End Time: _____

Signature Page: Test Case 3.5 - Test mapping of DBSAFE RSYS to TCID RSYS

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.6 TEST CASE 3.6 - TEST REMOVAL OF "BUILD GROUPINGS"

Validate that support for "build groupings" used to support FD Directory Build has been removed.

3.6.1 Test Description

3.6.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe will be performed on the DBSAFE.FORMAT_DEFS table.

Expected Results: The BUILD_GROUPING column will no longer exist.

b) Via SQL*Plus , a describe will be performed on the DBSAFE.GSI_TCID_VCNS table.

Expected Results: The BUILD_GROUPING column will no longer exist.

c) Via SQL*Plus , a describe will be performed on the DBSAFE.LEGAL_BLD_GROUP view.

Expected Results: The view will no longer exist.

d) Via SQL*Plus , a describe will be performed on the DBSAFE.TEMP_VCN_LIST table.

Expected Results: The BUILD_GROUPING column will no longer exist.

e) Via SQL*Plus , a describe of the DBSAFE.VCN_GROUPS table will be performed.

Expected Results: The BUILD_GROUPING column will no longer exist.

f) From the CLCS DBSAFE Main Menu, the TCID option will be selected and the suboptions examined.

Expected Results: A BUILD_GROUP suboption will no longer exist.

3.6.1.2 Resource Requirements

3.6.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.6.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.6.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.6.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.6.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.6	Support for "build groupings" used to support FD Directory Build will be removed - Test Build no longer requires this capability. • Remove all columns and references to build groups from CLCS DBSAFE.

3.6.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.6.3 Procedure

Refer to Procedure 3.6 in Table 3.6 for test procedures.

Procedure 3.6 - Test removal of "build groupings"

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus , a describe will be performed on the DBSAFE.FORMAT_DEFS table.	The BUILD_GROUPING column will no longer exist.			
2.	Via SQL*Plus , a describe will be performed on the DBSAFE.GSI_TCID_VCNS table.	The BUILD_GROUPING column will no longer exist.			
3.	Via SQL*Plus , a describe will be performed on the DBSAFE.LEGAL_BLD_GROUP view.	The view will no longer exist.			
4.	Via SQL*Plus , a describe will be performed on the DBSAFE.TEMP_VCN_LIST table.	The BUILD_GROUPING column will no longer exist.			
5.	Via SQL*Plus , a describe of the DBSAFE.VCN_GROUPS table will be performed.	The BUILD_GROUPING column will no longer exist.			
6.	From the CLCS DBSAFE Main Menu, the TCID option will be selected and the suboptions examined.	A BUILD_GROUP suboption will no longer exist.			

Table 3.6

End Time: _____

Signature Page: Test Case 3.6 - Test removal of "build groupings"

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.7 TEST CASE 3.7 - TEST WORD_COUNT AND WORD_NUMBER

Validate that the WORD_COUNT and WORD_NUMBER columns have been removed from the common compiler record, and that they have been added to the UCS address record as WORD_COUNT and WORD_NUMBER and to the MDM address record as SIO_ WORD_COUNT and SIO_WORD_NUMBER.

3.7.1 Test Description

3.7.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe will be done on the DBSAFE.COMMON_CD_INFO table.

   Expected Results: The WORD_COUNT and WORD_NUMBER columns will no longer exist.

b) Via SQL*Plus , a describe of the DBSAFE.UCS_AD_INFO table will be performed.

   Expected Results: The WORD_COUNT and WORD_NUMBER columns will now exist.

c) Via SQL*Plus , a describe of the DBSAFE.MDM_AD_INFO table will be performed.

   Expected Results: The SIO_WORD_COUNT and SIO_WORD_NUMBER columns will now exist.

d) From the Implement option of the CLCS DBSAFE Main Menu, select the Address UCS suboption. Add an address record with Word Count and Word Number information.

   Expected Results: (The Add will be verified with the Query capability of the Address UCS form.) A DBSAFE.UCS_AD_INFO record will exist for the FD and it will contain WORD_NUMBER/WORD_COUNT information.

e) The Modify capability of the Address UCS form will then be used to modify the Word Count and Word Number values.

   Expected Results: (The Modify will be verified with the Query capability of the Address UCS form.) The DBSAFE.UCS_AD_INFO record will still exist for the FD and it will contain the modified WORD_NUMBER/WORD_COUNT information.

f) From the Implement option of the CLCS DBSAFE Main Menu, select the Address LDB/Uplink suboption. Add an address record with SIO Word Count and SIO Word Number information.

Expected Results: (The Add will be verified with the Query capability of the Address LDB/Uplink form.) A DBSAFE.MDM_AD_INFO record will exist for the FD and it will contain SIO_WORD_NUMBER/SIO_WORD_COUNT information.

g) The Modify capability of the Address LDB/Uplink form will then be used to modify the SIO Word Count and SIO Word Number values.

Expected Results: (The Modify will be verified with the Query capability of the Address LDB/Uplink form.) A DBSAFE.MDM_AD_INFO record will still exist for the FD and it will contain the modified SIO_WORD_NUMBER / SIO_WORD_COUNT information.

3.7.1.2 Resource Requirements

3.7.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.7.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.7.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.7.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.7.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.7	The WORD_COUNT and WORD_NUMBER columns will be removed from the common compiler record. They will be added to the UCS address record as WORD_COUNT and WORD_NUMBER and to the MDM address record as SIO_ WORD_COUNT and

	SIO_WORD_NUMBER.

3.7.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.7.3 Procedure

Refer to Procedure 3.7 in Table 3.7 for test procedures.

Procedure 3.7 - Test word_count and word_number

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus , a describe will be done on the DBSAFE.COMMON_CD_INFO table.	The WORD_COUNT and WORD_NUMBER columns will no longer exist.			
2.	Via SQL*Plus , a describe of the DBSAFE.UCS_AD_INFO table will be performed.	The WORD_COUNT and WORD_NUMBER columns will now exist.			
3.	Via SQL*Plus , a describe of the DBSAFE.MDM_AD_INFO table will be performed.	The WORD_COUNT and WORD_NUMBER columns will now exist.			
4.	From the Implement option of the CLCS DBSAFE Main Menu, select the Address UCS suboption. Add an address record with Word Count and Word Number information.	(The Add will be verified with the Query capability of the Address UCS form.) A UCS_AD_INFO record will exist for the FD and it will contain WORD_NUMBER / WORD_COUNT information.			
5.	The Modify capability of the Address UCS form will then be used to modify the Word Count and Word Number values.	(The Modify will be verified with the Query capability of the Address UCS form.) The DBSAFE.UCS_AD_INFO record will still exist for the FD and it will contain the modified WORD_NUMBER / WORD_COUNT information.			

6.	From the Implement option of the CLCS DBSAFE Main Menu, select the Address LDB/Uplink suboption. Add an address record with SIO Word Count and SIO Word Number information.	(The Add will be verified with the Query capability of the Address LDB/Uplink form.) A DBSAFE.MDM_AD_INFO record will exist for the FD and it will contain SIO_WORD_NUMBER / SIO_WORD_COUNT information.			
7.	The Modify capability of the Address LDB/Uplink form will then be used to modify the SIO Word Count and SIO Word Number values.	(The Modify will be verified with the Query capability of the Address LDB/Uplink form.) A DBSAFE. MDM_AD_INFO record will still exist for the FD and it will contain the modified SIO_WORD_NUMBER / SIO_WORD_COUNT information.			

Table 3.7

End Time: _____

Signature Page: Test Case 3.7 - Test word_count and word_number

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.8 TEST CASE 3.8 - TEST ELIMINATION OF NUMBER COLUMNS

Validate that the TYPE_NUMBER, SUBTYPE_NUMBER, UNIT_NUMBER, and STATE_CLASS_NUMBER columns have been removed from the common compiler record, but have been retained in the 'legal tables'.

3.8.1 Test Description

3.8.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe will be done on the DBSAFE.COMMON_CD_INFO table.

   Expected Results: The TYPE_NUMBER, SUBTYPE_NUMBER, UNIT_NUMBER, and STATE_CLASS_NUMBER columns will no longer exist.

b) Via SQL*Plus , a describe of the DBSAFE.TYPE_INFO table will be performed.

   Expected Results: The TYPE_NUMBER column will still exist.

c) Via SQL*Plus , a describe of the DBSAFE.SUBTYPE_INFO table will be performed.

   Expected Results: The SUBTYPE_NUMBER column will still exist.

d) Via SQL*Plus , a describe of the DBSAFE.ENG_UNIT_INFO table will be performed.

   Expected Results: The UNIT_NUMBER column will still exist.

e) Via SQL*Plus , a describe of the DBSAFE.STATE_INFO table will be performed.

   Expected Results: The STATE_CLASS_NUMBER column will still exist.

3.8.1.2 Resource Requirements

3.8.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.8.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.8.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.8.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.8.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.8	The following columns will be removed from the common compiler data, but retained in 'legal tables' to support the TCS compiler interface: • TYPE_NUMBER • SUBTYPE_NUMBER • UNIT_NUMBER • STATE_CLASS_NUMBER

3.8.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.8.3 Procedure

Refer to Procedure 3.8 in Table 3.8 for test procedures.

Procedure 3.8 - Test elimination of number columns

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus , a describe will be done on the DBSAFE.COMMON_CD_INFO table.	The TYPE_NUMBER, SUBTYPE_NUMBER, UNIT_NUMBER, and STATE_CLASS_NUMBER columns will no longer exist.			
2.	Via SQL*Plus , a describe of the DBSAFE.TYPE_INFO table will be performed.	The TYPE_NUMBER column will still exist.			
3.	Via SQL*Plus , a describe of the DBSAFE.SUBTYPE_INFO table will be performed.	The SUBTYPE_NUMBER column will still exist.			
4.	Via SQL*Plus , a describe of the DBSAFE.ENG_UNIT_INFO table will be performed.	The UNIT_NUMBER column will still exist.			
5.	Via SQL*Plus , a describe of the DBSAFE.STATE_INFO table will be performed.	The STATE_CLASS_NUMBER column will still exist.			

Table 3.8

End Time: _____

Signature Page: Test Case 3.8 - Test elimination of number columns

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.9 TEST CASE 3.9 - TEST ELIMINATION OF HARDWARE DATA

Validate that the following columns have been removed from the hardware data records:
GLOBAL_CMD_FLAG
COMMIT_CRITERIA_IND
LOG_CRITERIA
EMON_PAGE
SYSTEM_LOW_LIMIT
SYSTEM_HIGH_LIMIT
GOAL_LOW_LIMIT
GOAL_HIGH_LIMIT
CDS_LOW_LIMIT
CDS_HIGH_LIMIT
SYSTEM_LOW_FLAG
SYSTEM_HIGH_FLAG
GOAL_LOW_FLAG
GOAL_HIGH_FLAG
SIG_CHANGE_VAL
CDS_COMPRESS_VAL
FP_LIMIT_FLAG
SYS_EM_COMPARE_COND
SYS_EM_COMPARE_VAL
GOAL_EM_COMPARE_COND
GOAL_EM_COMPARE_VAL
CDS_EM_COMPARE_COND
CDS_EM_COMPARE_VAL
SYS_EM_STATE
GOAL_EM_STATE
CDS_EM_STATE
REMOTE_COMM_IND

3.9.1 Test Description

3.9.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe will be done on the DBSAFE.COMMON_HD_INFO table and all the hardware variant tables:
   DBSAFE.ANALOG_MEAS_HD_INFO
   DBSAFE.ANALOG_STIM_HD_INFO
   DBSAFE.BTU_HD_INFO
   DBSAFE.DIGITAL_PATTERN_MEAS_HD_INFO
   DBSAFE.DIGITAL_PATTERN_STIM_HD_INFO
   DBSAFE.DISCRETE_MEAS_HD_INFO
   DBSAFE.DISCRETE_STIM_HD_INFO

DBSAFE.PSEUDO_HD_INFO
DBSAFE.SYSTEM_STATUS_HD_INFO

Expected Results: None of the above listed columns will exist in these tables.

3.9.1.2 Resource Requirements

3.9.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.9.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.9.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.9.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.9.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.9	The following columns and references to the following columns will be removed. • GLOBAL_CMD_FLAG • CDBFR_START_BIT • SLOPE_1 • OFFSET_1 • START_COUNTS_2 • SLOPE_2 • OFFSET_2 • START_COUNTS_3 • SLOPE_3 • OFFSET_3 • START_COUNTS_4 • SLOPE_4 • OFFSET_4

	• COMMIT_CRITERIA_IND • LOG_CRITERIA • EMON_PAGE • SYSTEM_LOW_LIMIT • SYSTEM_HIGH_LIMIT • GOAL_LOW_LIMIT • GOAL_HIGH_LIMIT • CDS_LOW_LIMIT • CDS_HIGH_LIMIT • SYSTEM_LOW_FLAG • SYSTEM_HIGH_FLAG • GOAL_LOW_FLAG • GOAL_HIGH_FLAG • SIG_CHANGE_VAL • CDS_COMPRESS_VAL • FP_LIMIT_FLAG • SYS_EM_COMPARE_COND • SYS_EM_COMPARE_VAL • GOAL_EM_COMPARE_COND • GOAL_EM_COMPARE_VAL • CDS_EM_COMPARE_COND • CDS_EM_COMPARE_VAL • SYS_EM_STATE • GOAL_EM_STATE • CDS_EM_STATE • REMOTE_COMM_IND • LINK

3.9.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.9.3 Procedure

Refer to Procedure 3.9 in Table 3.9 for test procedures.

Procedure 3.9 - Test elimination of Hardware Data

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus , a describe will be done on the DBSAFE.COMMON_HD_INFO table and all the hardware variant tables: DBSAFE.ANALOG_MEAS_HD_INFO DBSAFE.ANALOG_STIM_HD_INFO DBSAFE.BTU_HD_INFO DBSAFE.DIGITAL_PATTERN_MEAS_HD_INFO DBSAFE.DIGITAL_PATTERN_STIM_HD_INFO DBSAFE.DISCRETE_MEAS_HD_INFO DBSAFE.DISCRETE_STIM_HD_INFO DBSAFE.PSEUDO_HD_INFO DBSAFE.SYSTEM_STATUS_HD_INFO	None of the above listed columns will exist in these tables.			

Table 3.9

End Time: _____

Signature Page: Test Case 3.9 - Test elimination of Hardware Data

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.10 TEST CASE 3.10 - TEST ELIMINATION OF CALIBRATION DATA

Validate that the SLOPE_1, OFFSET_1, START_COUNTS_2, SLOPE_2, OFFSET_2, START_COUNTS_3, SLOPE_3, OFFSET_3, START_COUNTS_4, SLOPE_4, OFFSET_4 columns have been removed from the calibration data records.

3.10.1 Test Description

3.10.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe will be done on the DBSAFE.CALIBRATION_CD_INFO table.

Expected Results: None of the above listed columns will exist in this table.

3.10.1.2 Resource Requirements

3.10.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.10.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.10.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.10.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.10.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.9	The following columns and references to the following columns will be removed. • GLOBAL_CMD_FLAG • CDBFR_START_BIT

	• SLOPE_1 • OFFSET_1 • START_COUNTS_2 • SLOPE_2 • OFFSET_2 • START_COUNTS_3 • SLOPE_3 • OFFSET_3 • START_COUNTS_4 • SLOPE_4 • OFFSET_4 • COMMIT_CRITERIA_IND • LOG_CRITERIA • EMON_PAGE • SYSTEM_LOW_LIMIT • SYSTEM_HIGH_LIMIT • GOAL_LOW_LIMIT • GOAL_HIGH_LIMIT • CDS_LOW_LIMIT • CDS_HIGH_LIMIT • SYSTEM_LOW_FLAG • SYSTEM_HIGH_FLAG • GOAL_LOW_FLAG • GOAL_HIGH_FLAG • SIG_CHANGE_VAL • CDS_COMPRESS_VAL • FP_LIMIT_FLAG • SYS_EM_COMPARE_COND • SYS_EM_COMPARE_VAL • GOAL_EM_COMPARE_COND • GOAL_EM_COMPARE_VAL • CDS_EM_COMPARE_COND • CDS_EM_COMPARE_VAL • SYS_EM_STATE • GOAL_EM_STATE • CDS_EM_STATE • REMOTE_COMM_IND • LINK

3.10.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.10.3 Procedure

Refer to Procedure 3.10 in Table 3.10 for test procedures.

Procedure 3.10 - Test elimination of Calibration Data **Date:** **Location:** **Start Time:**					
Test Setup/Initial Conditions -					
Step	**Description**	**Expected Results**	**Comments**	**TC**	**QA**
1.	Via SQL*Plus , a describe will be done on the DBSAFE.CALIBRATION_CD_INFO table.	None of the above listed columns will exist in this table.			

Table 3.10

End Time: _____

Signature Page: Test Case 3.10 - Test elimination of Calibration Data

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.11 TEST CASE 3.11 - TEST ELIMINATION OF ADDRESS DATA

Validate that the CDBFR_START_BIT and LINK columns have been removed from the address data records.

3.11.1 Test Description

3.11.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe will be done on the following tables:
   DBSAFE.GSE_AD_INFO
   DBSAFE.MDM_AD_INFO
   DBSAFE.PCM_AD_INFO
   DBSAFE.UCS_AD_INFO

Expected Results: None of the above listed columns will exist in these tables.

3.11.1.2 Resource Requirements

3.11.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.11.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.11.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.11.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.11.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.9	The following columns and references to the following columns will be

	removed. • GLOBAL_CMD_FLAG • CDBFR_START_BIT • SLOPE_1 • OFFSET_1 • START_COUNTS_2 • SLOPE_2 • OFFSET_2 • START_COUNTS_3 • SLOPE_3 • OFFSET_3 • START_COUNTS_4 • SLOPE_4 • OFFSET_4 • COMMIT_CRITERIA_IND • LOG_CRITERIA • EMON_PAGE • SYSTEM_LOW_LIMIT • SYSTEM_HIGH_LIMIT • GOAL_LOW_LIMIT • GOAL_HIGH_LIMIT • CDS_LOW_LIMIT • CDS_HIGH_LIMIT • SYSTEM_LOW_FLAG • SYSTEM_HIGH_FLAG • GOAL_LOW_FLAG • GOAL_HIGH_FLAG • SIG_CHANGE_VAL • CDS_COMPRESS_VAL • FP_LIMIT_FLAG • SYS_EM_COMPARE_COND • SYS_EM_COMPARE_VAL • GOAL_EM_COMPARE_COND • GOAL_EM_COMPARE_VAL • CDS_EM_COMPARE_COND • CDS_EM_COMPARE_VAL • SYS_EM_STATE • GOAL_EM_STATE • CDS_EM_STATE • REMOTE_COMM_IND • LINK

3.11.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.11.3 Procedure

Refer to Procedure 3.11 in Table 3.11 for test procedures.

Procedure 3.11 - Test elimination of Address Data **Date:** **Location:** **Start Time:**					
Test Setup/Initial Conditions -					
Step	**Description**	**Expected Results**	**Comments**	**TC**	**QA**
1.	Via SQL*Plus , a describe will be done on the following tables: DBSAFE.GSE_AD_INFO DBSAFE.MDM_AD_INFO DBSAFE.PCM_AD_INFO DBSAFE.UCS_AD_INFO	None of the above listed columns will exist in these tables.			

Table 3.11

End Time: _____

Signature Page: Test Case 3.11 - Test elimination of Address Data

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.12 TEST CASE 3.12 - TEST RENAMING OF COLUMNS

Validate that the following columns and references to the following columns have been modified:

- Renamed FEP to GATEWAY
- Renamed CDBFR_LENGTH to CONVERTED_LENGTH
- Renamed VALID_CDBFR_LENGTH to VALID_CONVERTED_LENGTH
- Renamed CDBFR_RESIDENT_IND to DATA_DIST_SRC
- Renamed EIU_NUMBER to GPC_EIU_NUMBER in the PCM address table.

3.12.1 Test Description

3.12.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus, a describe will be performed on the DBSAFE.CALIBRATION_CD_INFO and DBSAFE.SYSTEM_STATUS_HD_INFO tables.

   Expected Results: The FEP column will now be called GATEWAY.

b) Via SQL*Plus, a describe will be performed on the DBSAFE.COMMON_CD_INFO table.

   Expected Results: The CDBFR_LENGTH column will now be replaced by a CONVERTED LENGTH column.

c) Via SQL*Plus, a describe will be performed on the DBSAFE.CALIBRATION_CD_INFO table.

   Expected Results: The VALID_CDBFR_LENGTH column will now be replaced with a VALID_CONVERTED_LENGTH column.

d) Via SQL*Plus, a describe will be done on the DBSAFE.SOURCE_INFO table.

   Expected Results: The CDBFR_RESIDENT_IND column will now be replaced with a DATA_DIST_SRC column.

e) Via SQL*Plus, a describe will be done on the DBSAFE.PCM_AD_INFO table.

   Expected Results: The EIU_NUMBER column will now be replaced with a GPC_EIU_NUMBER column.

3.12.1.2 Resource Requirements

3.12.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.12.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.12.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.12.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.12.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description

1.2.2.10	The following columns and references to the following columns will be modified:
	• Rename FEP to GATEWAY
	• Rename CDBFR_LENGTH to CONVERTED_LENGTH
	  • Retain the algorithm for assigning the values.
	• Rename VALID_CDBFR_LENGTH to VALID_CONVERTED_LENGTH
	• Rename CDBFR_RESIDENT_IND to DATA_DIST_SRC
	  • Retain the values that are stored in a look-up table and used to drive certain software tests.
	  • Retain the software tests.
	• Rename EIU_NUMBER to GPC_EIU_NUMBER in the PCM address table.

3.12.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.12.3 Procedure

Refer to Procedure 3.12 in Table 3.12 for test procedures.

Procedure 3.12 - Test Renaming of columns

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus, a describe will be performed on the DBSAFE.CALIBRATION_CD_INFO and DBSAFE.SYSTEM_STATUS_HD_INFO tables.	The FEP column will be called GATEWAY.			
2.	Via SQL*Plus, a describe will be performed on the DBSAFE.COMMON_CD_INFO table.	The CDBFR_LENGTH column will be replaced by a CONVERTED LENGTH column.			
3.	Via SQL*Plus, a describe will be performed on the DBSAFE.CALIBRATION_CD_INFO table.	The VALID_CDBFR_LENGTH column will be replaced with a VALID_CONVERTED _LENGTH column.			
4.	Via SQL*Plus, a describe will be done on the DBSAFE.SOURCE_INFO table.	The CDBFR_RESIDENT_IND column will be replaced with a DATA_DIST_SRC column.			
5.	Via SQL*Plus, a describe will be done on the DBSAFE.PCM_AD_INFO table.	The EIU_NUMBER column will be replaced with a GPC_EIU_NUMBER column.			

Table 3.12

End Time: _____

Signature Page: Test Case 3.12 - Test Renaming of columns

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.13 TEST CASE 3.13 - TEST DELETION OF TABLE VIEWS

Validate that the following views have been removed:

- DBSAFE.COMPILER_DATA
- DBSAFE.SEGMENT_DATA
- DBSAFE.AM_HARDWARE_DATA
- DBSAFE.AS_HARDWARE_DATA
- DBSAFE.BTU_HARDWARE_DATA
- DBSAFE.DPM_HARDWARE_DATA
- DBSAFE.DPS_HARDWARE_DATA
- DBSAFE.DM_HARDWARE_DATA
- DBSAFE.DS_HARDWARE_DATA
- DBSAFE.PS_HARDWARE_DATA
- DBSAFE.SSA_HARDWARE_DATA
- DBSAFE.LINK_DATA
- DBSAFE.TCIDDB_FORMATS
- DBSAFE.TCIDDB_VCNS

3.13.1 Test Description

3.13.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus, a describe will be performed on the following views:
   DBSAFE.COMPILER_DATA
   DBSAFE.SEGMENT_DATA
   DBSAFE.AM_HARDWARE_DATA
   DBSAFE.AS_HARDWARE_DATA
   DBSAFE.BTU_HARDWARE_DATA
   DBSAFE.DPM_HARDWARE_DATA
   DBSAFE.DPS_HARDWARE_DATA
   DBSAFE.DM_HARDWARE_DATA
   DBSAFE.DS_HARDWARE_DATA
   DBSAFE.PS_HARDWARE_DATA
   DBSAFE.SSA_HARDWARE_DATA
   DBSAFE.LINK_DATA
   DBSAFE.TCIDDB_FORMATS
   DBSAFE.TCIDDB_VCNS

   Expected Results: The views will no longer exist.

3.13.1.2 Resource Requirements

3.13.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.13.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.13.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.13.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.13.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.11	The following views will be removed. (they only supported SDC TCID Data Bank Build which creates an emulated IDS-I Data Bank): • COMPILER_DATA • SEGMENT_DATA • AM_HARDWARE_DATA • AS_HARDWARE_DATA • BTU_HARDWARE_DATA • DPM_HARDWARE_DATA • DPS_HARDWARE_DATA • DM_HARDWARE_DATA • DS_HARDWARE_DATA • PS_HARDWARE_DATA • SSA_HARDWARE_DATA • LINK_DATA • TCIDDB_FORMATS • TCIDDB_VCNS

3.13.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.13.3 Procedure

Refer to Procedure 3.13 in Table 3.13 for test procedures.

Procedure 3.13 - Test deletion of table views

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus, a describe will be performed on all of the following views: DBSAFE.COMPILER_DATA DBSAFE.SEGMENT_DATA DBSAFE.AM_HARDWARE_DATA DBSAFE.AS_HARDWARE_DATA DBSAFE.BTU_HARDWARE_DATA DBSAFE.DPM_HARDWARE_DATA DBSAFE.DPS_HARDWARE_DATA DBSAFE.DM_HARDWARE_DATA DBSAFE.DS_HARDWARE_DATA DBSAFE.PS_HARDWARE_DATA DBSAFE.SSA_HARDWARE_DATA DBSAFE.LINK_DATA DBSAFE.TCIDDB_FORMATS DBSAFE.TCIDDB_VCNS	The views will no longer exist.			

Table 3.13

End Time: _____

Signature Page: Test Case 3.13 - Test deletion of table views

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.14 TEST CASE 3.14 - TEST ADDITION OF TABLE VIEWS

Validate that the following views have been added to support CLCS Test Build:

- DBSAFE.RAW_VCN_PULL
- DBSAFE.RAW_VCN_PRIORITY_PULL
- DBSAFE.RAW_USER_PRIORITY_PULL
- DBSAFE.TCID_VCN_DATA
- DBSAFE.RAW_GSE_PULL
- DBSAFE.TCID_GSE_DATA

3.14.1 Test Description

3.14.1.1 Detailed Description

Test Cases:

a) Via SQL*Plus , a describe will be performed on the following views:
DBSAFE.RAW_VCN_PULL
DBSAFE.RAW_VCN_PRIORITY_PULL
DBSAFE.RAW_USER_PRIORITY_PULL
DBSAFE.TCID_VCN_DATA
DBSAFE.RAW_GSE_PULL
DBSAFE.TCID_GSE_DATA

Expected Results: The views will now exist.

3.14.1.2 Resource Requirements

3.14.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.14.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.14.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.14.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.14.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.12	The following views will be added to support CLCS Test Build: • RAW_VCN_PULL • RAW_VCN_PRIORITY_PULL • RAW_USER_PRIORITY_PULL • TCID_VCN_DATA • RAW_GSE_PULL • TCID_GSE_DATA

3.14.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.14.3 Procedure

Refer to Procedure 3.14 in Table 3.14 for test procedures.

Procedure 3.14 - Test addition of table views

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	Via SQL*Plus, a describe will be performed on the following views: DBSAFE.RAW_VCN_PULL DBSAFE.RAW_VCN_PRIORITY_PULL DBSAFE.RAW_USER_PRIORITY_PULL DBSAFE.TCID_VCN_DATA DBSAFE.RAW_GSE_PULL DBSAFE.TCID_GSE_DATA	The views will now exist.			

Table 3.14

End Time: _____

Signature Page: Test Case 3.14 - Test addition of table views

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

3.15 TEST CASE 3.15 - TEST USER MAINTENANCE OF DISCRETE STATE AND ENG. UNIT

Validate the capability to allow the user to maintain DISCRETE STATE and ENGINEERING UNIT Data

- New forms will be created to allow maintenance of State Class Data and Eng Unit Data
- There will be DB Revision Tracking associated with the data
- An attempt to delete State Class Data or Eng Unit Data that is used by an existing FD will result in an error.

3.15.1 Test Description

3.15.1.1 Detailed Description

Test Cases:

a) From the DBSAFE Control option of the CLCS DBSAFE Main Menu, select the State Class suboption. Add a State Class record. Next, query in the added record and modify the State1 information. Go to the Implement Compiler Data form and use this State Class in a Compiler FD record. Return to the State Class form and attempt to delete the record.

   Expected Results: The Add, Modify and Delete will be verified with the Query capability of the State Class form. DB Revision information will be associated with the record. The attempt to delete the State Class will fail as long as an FD exists using it.

b) From the DBSAFE Control option of the CLCS DBSAFE Main Menu, select the Eng Unit suboption. Add an Eng Unit record. Next, query in the added record and modify the Description information. Go to the Implement Compiler Data form and use this Eng Unit in a Compiler FD record. Return to the Eng Unit form and attempt to delete the record.

   Expected Results: The Add, Modify and Delete will be verified with the Query capability of the Eng Unit form. DB Revision information will be associated with the record. The attempt to delete the Eng Unit will fail as long as an FD exists using it.

3.15.1.2 Resource Requirements

3.15.1.2.1 Test Personnel

Personnel required include at a minimum a Test Conductor and a QA witness. Skills required by test conductor (or designee) include an understanding of the CLCS DBSAFE execution environment and general Oracle knowledge.

3.15.1.2.2 Hardware

The following Hardware is required:

- Refer to Section 1.4

3.15.1.2.3 Software

The following Software is required:

- Refer to Section 1.4

3.15.1.2.4 Data

The following Data is required:

- Refer to Section 1.4

3.15.1.3 Requirements Summary

This test case demonstrates that the following functional requirements are met:

Requirement Number	Description
1.2.2.13	The capability to allow the user to maintain DISCRETE STATE and ENGINEERING UNIT Data will be added. • New forms will be created to allow maintenance of State Class Data and Eng Unit Data • There will be DB Revision Tracking associated with the data • An attempt to delete State Class Data or Eng Unit Data that is used by an existing FD will result in an error.

3.15.2 Pass/Fail Criteria

Successful completion of the test procedures without any problems that would result in the generation of critical problem reports and without an excessive number of major problem reports will be sufficient for this test to be considered passed.

3.15.3 Procedure

Refer to Procedure 3.15 in Table 3.15 for test procedures.

Procedure 3.15 - Test user maintenance of discrete state and eng. unit

Date: **Location:** **Start Time:**

Test Setup/Initial Conditions -

Step	Description	Expected Results	Comments	TC	QA
1.	From the DBSAFE Control option of the CLCS DBSAFE Main Menu, select the State Class suboption. Add a State Class record. Next, query in the added record and modify the State1 information. Go to the Implement Compiler Data form and use this State Class in a Compiler FD record. Return to the State Class form and attempt to delete the record.	The Add, Modify and Delete will be verified with the Query capability of the State Class form. DB Revision information will be associated with the record. The attempt to delete the State Class will fail as long as an FD exists using it.			
2.	From the DBSAFE Control option of the CLCS DBSAFE Main Menu, select the Eng Unit suboption. Add an Eng Unit record. Next, query in the added record and modify the Description information. Go to the Implement Compiler Data form and use this Eng Unit in a Compiler FD record. Return to the Eng Unit form and attempt to delete the record.	The Add, Modify and Delete will be verified with the Query capability of the Eng Unit form. DB Revision information will be associated with the record. The attempt to delete the Eng Unit will fail as long as an FD exists using it.			

Table 3.15

End Time: _____

Signature Page: Test Case 3.15 - Test user maintenance of discrete state and eng. unit

_____ _____

Quality Assurance **Date**

_____ _____

Test Conductor **Date**

Comments:

Appendix A Acronyms and Definitions

AT	Acceptance Test - Test to accept hardware and software from a vendor
Certification	Final approval to use a system for a specified set of operations (e.g., hazardous operations in the HMF, launch operations, etc.)
CI	Configuration Item
CIT	CSCI Integration Test
CLCS	Checkout and Launch Control System
CM	Configuration Management
COTS	Commercial Off The Shelf
CSC	Computer Software Component
CSCI	Computer Software Configuration Item
DAR	Delivery Acceptance Review
Describe	The SQL*Plus command used to display the layout of an Oracle table.
EDL	Engineering Development Laboratory
GSE	Ground Support Equipment
HCI	Human Computer Interface
HMF	Hypergolic Maintenance Facility
HW	Hardware
HWCI	Hardware Configuration Item
IDE	Integrated Development Environment
I/F	Interface
KSC	Kennedy Space Center
LAN	Local Area Network
LCC	Launch Control Complex
LMSMSS	Lockheed Martin Space Mission Systems and Services
LPS	Launch Processing System
NASA	National Aeronautics and Space Administration
MSC	Mission Systems Contract (held by LMSMSS)
OS	Operating System
PTR	Post-Test Review
PR	Problem Report

QA	Quality Assurance
QE	Quality Engineering
QT	Qualification Test
RLV	Reusable Launch Vehicle
RTPS	Real Time Processing System
RVM	Requirements Verification Matrix
SDC	Shuttle Data Center
SDE	Satellite Development Environment
SEMP	System Engineering Management Plan
SFOC	Space Flight Operations Contract (held by USA)
ST	System Test
SLWT	Super Light Weight Tank
S&MA	Safety and Mission Assurance (includes Reliability, Maintainability, Safety and Quality Assurance)
STS	Space Transportation System
SW	Software
TC	Test Conductor
TPR	Test Progress Review
TR	Test Report
TRR	Test Readiness Review
UAT	User Acceptance Test - Test performed by user community post delivery as part of the system certification process
UIT	Unit Integration Test
USA	United Space Alliance
UT	Unit Test
Validation	Testing performed by organization(s) outside of the developing organization to ensure that the delivered system processes data correctly and conforms to the operations concepts

Appendix B Requirements Traceability and Test Methods Matrix

The following table is intended to show which CLCS Functional Requirement is demonstrated in each CLCS DBSAFE CSCI Integration Test (CIT) and what test method was used in that test case. This table will be updated and baselined with each CIT starting with the Redstone Delivery.

Functional Requirement	Traced SLS Requirement	CI Test	Test Case	Test Method			
				Inspection	Analysis	Demo	Test
1.2.2.1	2.4.2.1, 2.4.2.2	Redstone CIT	3.1			✓	
1.2.2.2	2.4.2.1, 2.4.2.2	Redstone CIT	3.2			✓	✓
1.2.2.3	2.4.2.1, 2.4.2.2	Redstone CIT	3.3				✓
1.2.2.4	2.4.2.1, 2.4.2.2	Redstone CIT	3.4	✓			
1.2.2.5	2.4.2.1, 2.4.2.2	Redstone CIT	3.5				✓
1.2.2.6	2.4.2.1, 2.4.2.2	Redstone CIT	3.6			✓	
1.2.2.7	2.4.2.1, 2.4.2.2	Redstone CIT	3.7			✓	✓
1.2.2.8	2.4.2.1, 2.4.2.2	Redstone CIT	3.8			✓	
1.2.2.9	2.4.2.1, 2.4.2.2	Redstone CIT	3.9			✓	
1.2.2.9	2.4.2.1, 2.4.2.2	Redstone CIT	3.10			✓	
1.2.2.9	2.4.2.1, 2.4.2.2	Redstone CIT	3.11			✓	
1.2.2.10	2.4.2.1, 2.4.2.2	Redstone CIT	3.12			✓	
1.2.2.11	2.4.2.1, 2.4.2.2	Redstone CIT	3.13			✓	
1.2.2.12	2.4.2.1, 2.4.2.2	Redstone CIT	3.14			✓	
1.2.2.13	2.4.2.1, 2.4.2.2	Redstone CIT	3.15				✓

Appendix C Resource Requirements

This Appendix is not required. Refer to Section 1.4.

Appendix D Standard Test Operating Procedures

To gain access to DBSAFE, one must first have a valid userid on the LSDN. Contact the LSDN Help Desk to establish a new account and to obtain any necessary training on how to use a workstation. The Help Desk provides information to help resolve connectivity issues for persons without local access to an LSDN workstation.

Next, obtain an RSI password through the Access Control Data Base Administrator (ADBA) in the USA Quality group. The ADBA must update the RSI authorized access list, establish the Oracle account, and grant authorization to use the DBSAFE_USER database role. DBSAFE_USER is a password protected role that provides insert, update, and delete privileges on data and execute privileges on database procedures owned by DBSAFE. When an authorized person initiates DBSAFE (i.e., rXsi -c f40runmx dbsafe), the main menu looks up the password and sets their role to DBSAFE_USER. This provides the rights needed to modify the DBSAFE database while running DBSAFE applications. This role assignment is terminated when the DBSAFE session ends.

The final steps to obtain access to DBSAFE are managed by the DBSAFE Administrator. This is the person(s) authorized to run the Maintain User Data form (refer to Section 9.3) to define authorized DBSAFE operators, their rights to execute controlled DBSAFE functions, and their rights to change or delete specific sets of data within the DBSAFE Database. This data is initially checked by the DBSAFE main menu to ensure only authorized people running authorized functions are allowed to modify data. DBSAFE applications access this data as needed to continually enforce privilege constraints defined by the DBSAFE Administrator.